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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/661,473

09/15/2003

Sang Seok Lee

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EXAMINER

KOCH, GEORGE R

ART UNIT

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DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/661,473	Applicant(s) LEE ET AL.	
	Examiner George R. Koch III	Art Unit 1791	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 April 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3-11 and 14-24 is/are pending in the application.
- 4a) Of the above claim(s) 20 and 21 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3-11, 14-19 and 22-24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 3/28/2008 has been entered.

Claim Rejections - 35 USC § 112

2. The 35 U.S.C. 112, second paragraph rejections from the previous office action of claims 3-11, 14-15, 16-18 and 22-23 have been lifted in view of applicant's amendments correcting claim dependency.

Claim Rejections - 35 USC § 102/103

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

4. Claims 1, 3-11, 14-19 and 24 are rejected under 35 U.S.C. 103(a) as obvious over Gaynes (US 6,129,804) in view of Satoshi (Machine translation of JP 2001-356353) and Ishihara (US 5,263,888) and Kakinuma (US 5,961,777).

Gaynes discloses an apparatus (see Figure 1) for manufacturing liquid crystal display (LCD) devices, comprising: at least one substrate bonding station (items 17 and 33) for bonding un-bonded first and second substrates, wherein the substrate bonding station includes first and second sides; at least one loader (load station 1) arranged at the first side of the substrate bonding station for loading the un-bonded first and second substrates into the substrate bonding station; and at least one unloader (output station 37) arranged at the second side for unloading bonded ones of the first and second substrates, wherein the substrate bonding station includes third and fourth sides, wherein third side is proximate the fourth side. The loaders are disclosed as (and are capable of) subsequently loading the substrates as claimed (see column 10, lines 1-9).

Gaynes discloses at least one hardening station (see Figures 2 and 3, items 66, and column 10, line 23 to 63) for hardening a sealant material arranged between the bonded ones of the first and second substrates, wherein the at least one hardening station is arranged proximate the fourth side of the at least one unloader and wherein the at least one unloader loads the bonded ones of the first and second substrates into the at least one hardening station.

In any event, it would have been obvious to one ordinary skill in the art to have utilized loading stations on one side and unloading stations on the other. One in the art would appreciate that such multiple loading improves throughput efficiency, by ensuring a single track of substrate movement, rather than inefficient backtracking in the movement of the substrate. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have used multiple loading/unloading structures in order to ensure efficiency by ensuring a single, one directional, pathway for the substrate.

Additionally, Gaynes does not disclose a sealing member wherein the sealing member thickness is set according to a pressure applied to the first and second glass substrates, or that the station is such that a first substrate has sealant thereon and a second substrate has liquid crystal thereon. Gaynes also does not disclose a plurality of hardening stations.

However, Satoshi discloses that it is known to use a sealing member wherein the sealing member thickness is set according to a pressure applied to the first and second glass substrates in a substrate bonding station. In paragraphs 0016-0017, Satoshi discloses an O-ring which halts the downward movement of the top chamber - this halt location would be a sealing member thickness. Satoshi's substrate bonding station includes upper and lower chamber units each having a flat surface facing each other, and the sealing member is provided near the flat surface of the at least one of the upper and lower chamber units. One in the art would appreciate that halt the downward movement would prevent crushing of the substrates by control of the appropriate thickness. Furthermore, rearrangement of parts is obvious (MPEP 2144.04), and one could place the O ring either on the flat surface as a mere mechanical modification. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have utilized such sealing members in order to prevent crushing of the substrate, and to place them as claimed.

Furthermore, Ishihara discloses that it is known to apply sealant to a first substrate and a liquid crystal to a second substrate (see Figure 3a, items 2 and 3). Furthermore, Ishihara discloses that processes of applying the sealant and liquid crystal to opposite substrates or the same substrate are obvious variants of each other (column 8, line 62 to column 9, line 3). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the

invention to have utilized structure to apply sealant to a first substrate and a liquid crystal to a second substrate as such techniques are disclosed in Ishihara and known to be an obvious variant of the same substrate application technique.

Kaninuma also discloses multiple, parallel loading and unloading structures (arms 8a-b, 12a-b, and 15a-b) and hardening structures (which cohabit with the press bonding structures). Kakinuma discloses that the two sets of bonding press portions so as to be able to synchronize with the overall processing speed (see column 5, lines 23-25). One would also appreciate that the duplication of the additional structures also maintains overall processing speed. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to utilize such parallel bonding presses in order to maintain overall processing speed.

As to claim 3, neither Gaynes nor Hazishume discloses the concept of arrange the bonding stations parallel to each other. Additionally, Hazishume does not suggest a plurality of bonding stations. Kakinuma also discloses two bonding presses (items 20). Kakinuma discloses that the two sets of bonding press portions so as to be able to synchronize with the overall processing speed (see column 5, lines 23-25). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have utilized such parallel bonding presses in order to maintain overall processing speed.

Similarly, as to claims 4-11 and 13-16, Kaninuma also discloses multiple, parallel loading and unloading structures (arms 8a-b, 12a-b, and 15a-b) and hardening structures (which cohabit with the press bonding structures). Kakinuma discloses that the two sets of bonding press portions so as to be able to synchronize with the overall processing speed (see column 5,

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lines 23-25). One would also appreciate that the duplication of the additional structures also maintains overall processing speed. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to utilize such parallel bonding presses in order to maintain overall processing speed.

As to claims 17 and 18, Gaynes discloses that the hardening station can direct either UV light (see column 10, lines 30-46) or direct heat (column 10, lines 55-61) to the sealant material.

As to claim 19, Gaynes does not disclose that the at least one substrate bonding station includes: a lower chamber unit openings in the first and second sides; an upper chamber unit including openings in the first and second sides, the upper chamber unit being raiseable and lowerable with respect to the lower chamber unit being and joinable to the lower chamber unit; an upper stage fixed to the upper chamber unit for securing the unbonded first substrate; a lower stage fixed to the lower chamber unit for securing the unbonded second glass substrate; and a sealing member provided on a surface of at least one of the upper and lower chamber units for sealing an interior space surrounding the first and second substrates, wherein the sealed interior space is definable by joined ones of the upper and lower chamber units.

However, Satoshi discloses that the at least one substrate bonding station includes: a lower chamber unit openings (item 10) in the first and second sides; an upper chamber (item 21) unit including openings in the first and second sides, the upper chamber unit being raiseable and lowerable with respect to the lower chamber unit being and joinable to the lower chamber unit; an upper stage (items 27 and 28) fixed to the upper chamber unit for securing the unbonded first substrate; a lower stage (item 9) fixed to the lower chamber unit for securing the unbonded second glass substrate; and a sealing member (O-ring 44) provided on a surface of at least one of

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the upper and lower chamber units for sealing an interior space surrounding the first and second substrates, wherein the sealed interior space is definable by joined ones of the upper and lower chamber units (see Figure 1 and translation). Satoshi's substrate bonding station includes upper and lower chamber units each having a flat surface facing each other, and the sealing member is provided near the flat surface of the at least one of the upper and lower chamber units.

Furthermore, rearrangement of parts is obvious (MPEP 2144.04), and one could place the O ring either on the flat surface as a mere mechanical modification. Satoshi discloses that this bonding station results in substrates that can be stuck on with a high degree of accuracy in a vacuum (paragraph 0047). Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to use the claimed bonding station in order to bond substrates with a high degree of accuracy.

As to claim 24, Gaynes discloses a plurality of bonding stations (items 17 and 33). Similarly, Kaninuma discloses multiple bonding presses.

5. Claims 1, 3-11, 14-19 and 22-24 are rejected under 35 U.S.C. 103(a) as obvious over Hazishume (US 2002/0062787) in view of Ishihara (US 5,263,888) and (optionally) Satoshi (Machine translation of JP 2001-356353).

Hazishume discloses an apparatus for manufacturing LCD displays (paragraphs 0001-0002), comprising at least one substrate bonding station (Figures 5, 18, 19, called a pressing device), at least one loader arranged at the first side of the substrate for subsequently loading the first substrate and second substrate (item 38B, and see Figure 6) into the substrate bonding

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station, and at least one unloader arranged at a second side for unloading the bonded first and second substrates (either item 38c or 38d), wherein the substrate bonding station includes 3rd and 4th sides, wherein the third side is proximate the fourth side (and compare especially Figure 5 of Hazishume with Figure 2 of the instant application). Hazishume discloses numerous exemplary bonding stations (Figures 35, 36 and 37), which uses a sealing member (called an O-ring - see paragraph 0276 and 0281-0284). The sealing member thickness is capable of being used such that it is set according to a pressure applied to the first and second glass substrates. Hazishume discloses a hardening station as claimed (see Figure 5, item 37).

In any event, while Hazishume discloses a sealing member, one could theoretically argue that this sealing member is not capable of having the sealing member thickness is set according to a pressure applied to the first and second glass substrates, and Hazishume clearly does not disclose that the station is such that a first substrate has sealant thereon and a second substrate has liquid crystal thereon. Hazishume also does not disclose a plurality of hardening stations.

However, Satoshi discloses that it is known to use a sealing member wherein the sealing member thickness is set according to a pressure applied to the first and second glass substrates in a substrate bonding station. In paragraphs 0016-0017, Satoshi discloses an O-ring which halts the downward movement of the top chamber - this halt location would be a sealing member thickness. Satoshi's substrate bonding station includes upper and lower chamber units each having a flat surface facing each other, and the sealing member is provided near the flat surface of the at least one of the upper and lower chamber units. One in the art would appreciate that halt the downward movement would prevent crushing of the substrates by control of the appropriate thickness. Furthermore, rearrangement of parts is obvious (MPEP 2144.04), and on

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could place the O ring either on the flat surface as a mere mechanical modification. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have utilized such sealing members in order to prevent crushing of the substrate, and to place them as claimed.

Furthermore, Ishihara discloses that it is known to apply sealant to a first substrate and a liquid crystal to a second substrate (see Figure 3a, items 2 and 3). Furthermore, Ishihara discloses that processes of applying the sealant and liquid crystal to opposite substrates or the same substrate are obvious variants of each other (column 8, line 62 to column 9, line 3). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have utilized structure to apply sealant to a first substrate and a liquid crystal to a second substrate as such techniques are disclosed in Ishihara and known to be an obvious variant of the same substrate application technique.

Additionally, Kaninuma also discloses multiple, parallel loading and unloading structures (arms 8a-b, 12a-b, and 15a-b) and hardening structures (which cohabit with the press bonding structures). Kakinuma discloses that the two sets of bonding press portions so as to be able to synchronize with the overall processing speed (see column 5, lines 23-25). One would also appreciate that the duplication of the additional structures also maintains overall processing speed. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to utilize such parallel bonding presses in order to maintain overall processing speed.

As to claim 3, Hazishume does not disclose the concept of arrange the bonding stations parallel to each other. Additionally, Hazishume does not suggest a plurality of bonding stations.

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Kakinuma also discloses two bonding presses (items 20). Kakinuma discloses that the two sets of bonding press portions so as to be able to synchronize with the overall processing speed (see column 5, lines 23-25). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have utilized such parallel bonding presses in order to maintain overall processing speed.

Similarly, as to claims 4-11 and 13-16, Kaninuma also discloses multiple, parallel loading and unloading structures (arms 8a-b, 12a-b, and 15a-b) and hardening structures (which cohabit with the press bonding structures). Kakinuma discloses that the two sets of bonding press portions so as to be able to synchronize with the overall processing speed (see column 5, lines 23-25). One would also appreciate that the duplication of the additional structures also maintains overall processing speed. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to utilize such parallel bonding presses in order to maintain overall processing speed.

Additionally, as to claim 16, Hazishume shows a one-to-one correspondence between the hardening station and loader (by showing one of each).

As to claim 17, Hazishume discloses a UV lamp (paragraph 0200).

As to claim 18, Hazishume discloses that a heater may replace the UV lamp (see paragraph 0243).

As to claim 19, Figure 35 of Hazishume shows further details of the aligning/pressing device, which includes a lower chamber unit (231b) with openings in first and second sides, and upper chamber unit (231a) including openings in first and second sides, the upper chamber unit

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being raisable and lowerable with respect to the loower chamber unit (raising of upper chamber unit is described in paragraph 0275) being and joinable to the lower chamber unit (as shown0, an upper stage as claimed (237a) and a lower stage as claimed (item 237b), and a sealing member as claimed (O-ring 241 - and see paragraphs 0275-0280).

As to claims 22 and 23, Hazishume discloses that the number of the plurality of bonding stations (item 36) equals the number of loaders (item 38b), and the number of unloaders (item 38c).

As to claim 24, duplication of parts is obvious (MPEP 2144.04). Therefore, it would have been obvious to have included multiple bonding stations.

Response to Arguments

6. Applicant's arguments filed 3/28/2008 have been fully considered but they are not persuasive.

Applicant argues that the prior art does not disclose the placement of the sealing member. However, reaarangement of parts is obvious. See MPEP 2144.04.

Applicant also argues that the references do not disclose multiple hardening stations. However, this is unpersuasive in light of Kakinuma. Furthermore, duplication of parts is obvious. MPEP 2144.04.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to George R. Koch III whose telephone number is (571) 272-1230

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(TDD only). If the applicant cannot make a direct TDD-to-TDD call, the applicant can communicate by calling the Federal Relay Service at 1-866-377-8642 and giving the operator the above TDD number. The examiner can normally be reached on M-F 9-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Philip Tucker can be reached on (571) 272-1095. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/George R. Koch III/
Primary Examiner, Art Unit 1791

4/28/2008